WOLF CREEK
NUCLEAR OPERATING CORPORATION

Donna Jacobs
Vice President Operations and Plant Manager

December 2, 2004

WO 04-0053

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Docket No. 50-482: Licensee Event Report 2004-005-00, Reactor Trip Due To Lightning Strike in Switchyard

Gentlemen:

The enclosed Licensee Event Report (LER) 2004-005-00 is being submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A) regarding a Reactor Trip at Wolf Creek Generating Station.

Wolf Creek Nuclear Operating Corporation has made no commitments in the enclosed LER.

If you should have any questions regarding this submittal, please contact me at (620) 364-4246 or Mr. Kevin Moles at (620) 364-4126.

Sincerely,

Donna Jacobs

DJ/rlg

Enclosure

cc: J. N. Donohew (NRC), w/e
D. N. Graves (NRC), w/e
B. S. Mallett (NRC), w/e
Senior Resident Inspector (NRC), w/e

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Automatic Reactor Resulting From Lightning Strike In Switchyard

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
10	07	2004	2004	- 005 -	00	12	02	2004	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☑ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify In Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Kevin J. Moles, Manager Regulatory Affairs	(620) 364-4126

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☉ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On October 7, 2004, at 11:48 A.M., Wolf Creek Generating Station (WCGS) experienced an automatic reactor trip due to indicated high main turbine vibrations. Concurrent with this event, several lightning strikes from an electrical storm were observed in the immediate area, including one recorded in the vicinity of the steel high line tower for the Main Startup Transformer. This lightning strike created an electromagnetic interference (EMI) that caused the actuation of the Main Turbine High-High Vibration Trip circuitry. The resultant turbine trip actuated an automatic reactor trip. Subsequent investigation of Main Turbine vibration and other performance data has validated that no actual high vibration was present either at the time of the Main Turbine trip, during the ensuing turbine coastdown, or during the subsequent plant restart.

All control rods fully inserted and all safety-related equipment operated as designed. The "A" train of the Residual Heat Removal System (RHR) was out of service for normal maintenance at the time of this event.

The safety significance of this event is low. All control rods fully inserted, and all safety-related equipment operated as expected. There were no adverse effects on the health and safety of the public.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

Background:

The Turbine Supervisory Instrumentation (TSI) System [EIIS Code: JJ] monitors selected turbine generator parameters and provides corresponding information to Operations personnel as well as input signals to the turbine's Electro Hydraulic Control System (EHC) [EIIS Code: TG] . The Turbine Supervisory Instrumentation maintains a history of turbine data plus assists during operation, maintenance and tests by providing information of specific turbine parameters. The Turbine Vibration Monitoring System is part of the TSI and is designed to sense, record and indicate bearing vibration and phase angle information. The vibration monitoring system provides both local and remote high vibration alarms. In addition, a high-high alarm provides alarm and turbine trip functions.

Plant Conditions Prior to the Event:
MODE – 1
Power – 100 percent
Normal Operating Temperature and Pressure

Event Description:

On October 7, 2004 Wolf Creek Generating Station (WCGS) was operating at 100 percent steady state power, with the "A" train of the Residual Heat Removal System (RHR) out of service for normal maintenance. At 11:48 A.M., the plant experienced an automatic reactor trip due to indicated high main turbine vibrations. Concurrent with this event, several lightning strikes from an electrical storm were observed in the immediate area, including one recorded in the vicinity of the steel high line tower for the Main Startup Transformer. This lightning strike created an induced electromagnetic field (EMF) that caused the actuation of the Main Turbine High-High Vibration Trip circuitry, which then caused the subsequent automatic reactor trip.

All control rods fully inserted and all safety-related equipment operated as designed. With the exception of the normal maintenance in progress on the "A" RHR pump, no other activities were underway at the time of this event.

Basis for Reportability:

This event is reportable per 10 CFR 50.73(a)(2)(iv)(A), which requires reporting of "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section." Paragraph (B) (1) of 10 CFR 50.73(a)(2)(iv) includes "Reactor protection system (RPS) including: reactor scram or reactor trip."

Root Cause:

The root cause of this event was a lightning induced electromagnetic interference (EMI), triggered by an electrical storm. This EMI caused a false high-high vibration signal from the main turbine vibration monitoring system that actuated the turbine trip logic that tripped the main turbine.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

This signal has been verified to be a false input through the verification of normal vibration levels prior to the trip, during the coast down of the turbine following the trip, and during and after the subsequent plant return to full power operation. There were no abnormal vibrations noted in the turbine building, nor were any electrical trips initiated from the generation protection or switchyard protection systems during this event.

Corrective Actions:

Walkdowns of the containment structure, all power block buildings, and switchyard were conducted following this event. No damage to any system, structure, or components due to this event was identified. Main turbine data collected after the turbine trip was reviewed and verified that there was no indication of any damage to the turbine. An electrical ground on the EHC system was repaired by replacement of an associated relay and power supply.

Safety Significance:

The safety significance of this event is low. All safety related systems, structures, and components performed as required and expected. Nuclear safety was maintained by implementation of station procedures after the automatic shutdown of the reactor. There were no adverse effects on the health and safety of the public.

Operating Experience/Previous Events:

A review of WCNOC License Event Reports submitted over the last 5 years revealed no instances where a reactor trip resulted from EMI generated from a lightning strike in the vicinity of power block structures or the switchyard.